



# **FUTURES: Detecting The Early Signals**

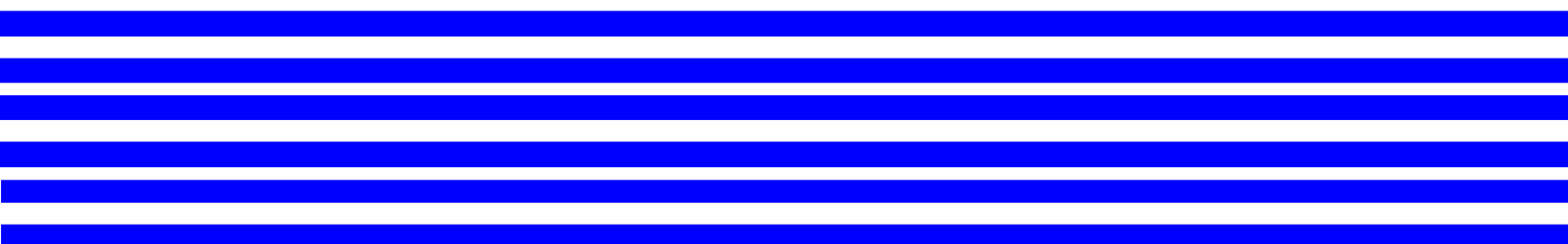
## **Science To Achieve Results Program**

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### ***1999 Grants Announcement***

**Opening Date: June 15, 1998**

**Closing Date: September 10, 1998**



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In this announcement the U.S. Environmental Protection Agency (EPA), Office of Research and Development (ORD), invites grant applications on:

### ***FUTURES: DETECTING THE EARLY SIGNALS***

This invitation provides relevant background information, summarizes EPA's interest in the topic area, and describes the application and review process.

### **Background**

The question often arises whether serious environmental problems could be detected so that preventive or remedial actions could be started sooner than they have been heretofore. Early awareness of an environmental problem would result in the ability to cope with a less serious problem, one easier and cheaper to handle. The possibility and value of early detection of environmental problems were the subject of the Environmental Protection Agency Science Advisory Board's 1995 report, *Beyond the Horizon: Using Foresight to Protect the Environmental Future*. The report discusses why thinking about the future is important, possible systems of inquiry, and recommends that "...EPA should move towards using futures research and analysis in its programs and activities, particularly strategic planning and budgeting...." Specifically:

- "As much attention should be given to avoiding future problems as to controlling current ones," and

- "EPA should establish a strong environmental futures capability that serves as an early warning system for emerging environmental problems."

In its planning process the Office of Research and Development has committed itself to "establish capability and mechanisms within EPA to anticipate and identify environmental or other changes that may portend future risk, integrate futures planning into ongoing programs, and promote coordinated preparation for and response to change."

### **Scope of Research**

In this announcement ORD invites research grant applications to identify possible future environmental problems and to develop approaches for their solution. In order to perform its mission better, EPA wishes to engage the scientific community in finding ways to identify possible emerging environmental problems that the environmental research community needs to start working on before headlines have emerged. This solicitation aims to look ahead in two areas: in the natural sciences and in socio-economics.

Specifically, EPA requests applications in:

#### **A. Natural Sciences**

Applicants should:

1. suggest an area where scientific data are minimal, scattered, or conflicting that could portend a future environmental problem;

2. justify and defend that choice as appropriate, including consideration of potential environmental risk;

3. explain why the proposed investigator is the right person to provide the assessment.

The anticipated outputs of this grant are two:

1. The final project report should take the form of a report or review paper suitable for peer-reviewed journal publication examining the available data on the potential problem with the author's opinion as to what they mean in terms of environmental risk.

2. A recommended research and/or other program approach necessary to define suitably the size and extent of the possible risk.

Key features in proposal evaluation will be: (1) the seriousness of the identified potential problem, and (2) the value of the possible proposed synthesis even if the seriousness of the suspected problem turns out to be minimal.

Examples of problems which might have profited from such early examination in the past include (this is not a list of preferred or present topics):

- acid rain
- stratospheric ozone depletion
- DDT and bird thin egg shells
- PCBs, effects and environmental persistence

## **B. Socio-Economics**

The applicant should examine possible changes in the way we (the USA, the industrialized nations, the world, etc.), in the next five to twenty years, will think, do things, live, consume, invent, reproduce, etc., and what effects these changes will have on environmental problems, on our mind

set, on how we handle them, on the tools we will have available to handle them, on the costs and benefits of handling them, etc. Socioeconomic analyses can cover a variety of subjects, e.g., demographic changes, economic changes, environmental value changes, land use changes, etc. (Again, these are only examples, not a list of preferred topics.)

In particular, the applicant should:

1. choose a specific socio-economic concern;
2. justify that choice, describe the proposed analysis and analytical methods and provide an assessment of its impact on the environment; and
3. explain why the proposed investigator is the right person to provide the assessment.

The anticipated outputs from this grant are:

1. A final project report that takes the form of a report or review paper suitable for peer-reviewed journal publication exploring the proposed socio economic area of concern and drawing plausible conclusions as to environmental effects and risks;
2. a description of the analytical methods used and their applicability to other possible future environmental risks resulting from socio-economic changes;
3. Recommendations on what the follow-up to the paper should be, giving some attention to the implementability of the recommendations. Areas for possible follow-up should be broadly construed (e.g., research, monitoring, policy changes, public awareness, education, etc.)

It is anticipated that projects funded under both parts of this

solicitation will involve literature investigation and analysis, discussions with colleagues, and perhaps computer modeling. Applicants will be expected to budget for and participate in a workshop on environmental futures with EPA and other scientists, other agency officials, and other grantees in Washington, DC, to report on their research activities and to discuss issues of mutual interest.

## **Funding**

**Approximately \$1.0 million is expected to be available in Fiscal Year 1999 for award in this solicitation. The projected award may be up to \$150,000 for one year.**

## **Eligibility**

Academic and not-for-profit institutions located in the U.S., and state or local governments, are eligible under all existing authorizations. Profit-making firms and other federal agencies are not eligible to receive grants from EPA under this program. Federal agencies, national laboratories funded by federal agencies (FFRDCs), and federal employees are not eligible to submit applications to this program and may not serve in a principal leadership role on a grant.

Potential applicants who are uncertain of their eligibility should contact Dr. Robert E. Menzer in NCERQA, phone (202) 564-6849, EMail: [menzer.robert@epamail.epa.gov](mailto:menzer.robert@epamail.epa.gov)

# Standard Instructions for Submitting an Application

This section contains a set of special instructions related to how applicants should apply for an NCERQA grant.

## Sorting Code

In order to facilitate proper assignment and review of applications, each applicant is asked to identify the topic area in which their application is to be considered. It is the responsibility of the applicant to correctly identify the proper sorting code. Failure to do so will result in an inappropriate peer review assignment. At various places within the application, applicants will be asked to identify this topic area by using the appropriate Sorting Code. The Sorting Codes corresponding to research on Futures: Detecting the Early Signals are

### 99-NCERQA-A1

*for Natural Sciences applications*

or

### 99-NCERQA-A2

*for Socio-economics applications*

The Sorting Code must be placed at the top of the abstract (as shown in the abstract format), in Box 10 of Standard Form 424 (as described in the section on SF424), and should also be included in the address on the package that is sent to EPA (see the section on how to apply).

## The Application

The initial application is made through the submission of the materials described below. It is essential that the application contain all the information requested and be submitted in the formats described. If it is not, the application may be rejected on admin-

istrative grounds. If an application is considered for award, (i.e., after external peer review and internal review) additional forms and other information will be requested by the Project Officer. The application should not be bound or stapled in any way. The Application contains the following:

- A. **Standard Form 424:** The applicant must complete Standard Form 424 (see attached form and instructions). This form will act as a cover sheet for the application and should be its first page. Instructions for completion of the SF424 are included with the form. The form must contain the original signature of an authorized representative of the applying institution. Please note that both the Principal Investigator and an administrative contact should be identified in Section 5 of the SF424.
- B. **Key Contacts:** The applicant must complete the Key Contacts Form (attached) as the second page of the submitted application.
- C. **Abstract:** The abstract is a very important document. Prior to attending the peer review panel meetings, some of the panelists may read only the abstract. Therefore, it is critical that the abstract accurately describe the research being proposed and convey all the essential elements of the research. Also, for awarded grants, the abstracts will form the basis for an Annual Report of awards made under this program. The abstract should include the following information, as indicated in the example format provided:

1. **Sorting Code:** Use the correct code that corresponds to this topic area: 99-NCERQA-A1 or 99-NCERQA-A2.

2. **Title:** Use the exact title as it appears in the rest of the application.

3. **Investigators:** List the names and affiliations of each investigator who will significantly contribute to the project. Start with the Principal Investigator.

4. **Project Summary:** This should summarize: (a) the objectives of the study, (b) the approach to be used (which should give an accurate description of the project as described in the proposal), (c) the expected results of the project and how it addresses the solicitation, and (d) the use of the research that will result from successful completion of the work proposed.

5. **Supplemental Keywords:** A list of suggested keywords is provided for your use. Do not duplicate terms already used in the text of the abstract.

D. **Project Description:** This description must not exceed fifteen (15) consecutively numbered (center bottom), 8.5x11-inch pages of single-spaced standard 12-point type with 1-inch margins. The description must provide the following information:

1. **Objectives:** List the objectives of the project and briefly state why the intended research is important. This section can also include any background or introductory information that would help explain the objectives of the

study (one to two pages recommended).

2. **Approach:** Outline the methods, approaches, and techniques that you intend to employ in meeting the objectives stated above (five to 10 pages recommended).

3. **Expected Results or Benefits:** Describe the results you expect to achieve during the project, the benefits of success as they relate to future research that might be conducted, and the potential recipients of these benefits. This section must discuss the utility of the research project proposed for addressing future environmental problems (one to two pages recommended).

4. **General Project Information:** Discuss other information relevant to the potential success of the project. This should include facilities, personnel, project schedules, proposed management, interactions with other institutions, etc. (one to two pages recommended).

5. **Important Attachments:** Appendices and/or other information may be included but must remain within the 15-page limit. References cited are in addition to the 15 pages.

- E. **Resumés:** The resumés of the principal investigator and important co workers should be presented. Resumés must not exceed three consecutively numbered (bottom center), 8.5x11-inch pages of single-spaced standard 12-point type with 1-inch margins for each individual.

- F. **Current and Pending Support:** The applicant must identify any current and pending financial resources that are intended to support research that would consume the time of the principal investigator. This should be done by completing the appropriate form (see attachment). Failure to provide this information may delay consideration of your proposal.

- G. **Budget:** The applicant must present a detailed, itemized budget for the entire project. This budget must be in the format provided in the example (see attachment) and not exceed two consecutively numbered (bottom center), 8.5x11-inch pages with 1-inch margins. Please note that institutional cost sharing is not required and, therefore, does not have to be included in the budget table. If desired, a brief statement concerning cost sharing can be added to the budget justification.

- H. **Budget Justification:** This section should describe the basis for calculating the personnel, fringe benefits, travel, equipment, supplies, contractual support, and other costs identified in the itemized budget and explain the basis for their calculation (special attention should be given to explaining the travel, equipment, and other categories). This should also include an explanation of how the indirect costs were calculated. This justification should not exceed two consecutively numbered (bottom center),

8.5x11-inch pages of single-spaced standard 12-point type with 1-inch margins.

- I. **Postcard:** The Applicant must include with the application a self addressed, stamped 3x5-inch post card. This will be used to acknowledge receipt of the application and to transmit other important information to the applicant.

## How to Apply

The original and ten (10) copies of the fully developed application and five (5) additional copies of the abstract (15 in all), must be received by NCERQA no later than 4:00 P.M. EST on the closing date assigned to this topic area: September 10, 1998.

The application and abstract must be prepared in accordance with these instructions. Informal, incomplete, or unsigned proposals will not be considered. The application should not be bound or stapled in any way. The original and copies of the application should be secured with paper or binder clips. Completed applications should be sent via regular mail to:

**U.S. Environmental Protection  
Agency  
Peer Review Division (8703R)  
Sorting Code: 99-NCERQA-A1 or  
99-NCERQA-A2  
401 M Street, SW  
Washington DC 20460**

For express mail or courier-delivered applications, the following address must be used:

**U. S. Environmental Protection  
Agency  
Peer Review Division (8703R)  
Sorting Code: 99-NCERQA-A1 or  
99-NCERQA-A2  
1300 Pennsylvania Avenue, NW  
Room B-10105  
Washington, DC 20004**

Phone: (202) 564-6939 (for express mail applications)

The sorting code must be identified in the address (as shown above).

## Guidelines, Limitations, and Additional Requirements

If you wish to submit more than one application, you must ensure that the study proposed is significantly different from that in any other that has been submitted to this solicitation or from any other grant you are currently receiving from EPA or any other federal government agency.

Projects which contain subcontracts constituting more than 40% of the total direct cost of the grant for each year in which the subcontract is awarded will be subject to special review and may require additional justification.

## Review and Selection

All grant applications are initially reviewed by EPA to determine their legal and administrative acceptability. Acceptable applications are then reviewed by an appropriate technical peer review group. This review is designed to evaluate each proposal according to its scientific merit. In general, each review group is composed of non-EPA scientists, engineers, social scientists, and/or economists who are experts in their respective disciplines and are proficient in the technical areas they are reviewing. The reviewers use the following criteria to help them in their reviews:

1. The originality and creativity of the proposed study, and of the research methods proposed. Is the research approach practical and technically defensible, and can the project be performed within the proposed time period? Is the proposal well-prepared with supportive information that is self-explanatory and understandable?
2. The qualifications of the principal investigator(s) and other key personnel, including research

training, demonstrated knowledge of pertinent literature, experience, and publication records. Will all key personnel contribute a significant time commitment to the project?

3. The availability and/or adequacy of the facilities and equipment proposed for the project. Are there any deficiencies that may interfere with the successful completion of the study?
4. The responsiveness of the proposal to the solicitation.
5. Although budget information is not used by the reviewers as the basis for their evaluation of scientific merit, the reviewers are asked to provide their view on the appropriateness and/or adequacy of the proposed budget and its implications for the potential success of the proposed research. Input on requested equipment is of particular interest.

Applications that receive scores of excellent or very good from the peer reviewers are subjected to a programmatic review within EPA, the object being to assure a balanced research portfolio for the Agency.

Funding decisions are the sole responsibility of EPA. Grants are selected on the basis of technical merit, relevancy to the research priorities outlined, program balance, and budget. A summary statement of the scientific review by the peer panel will be provided to each applicant.

Applications selected for funding will require additional certifications, possibly a revised budget, and responses to any comments or suggestions offered by the peer reviewers. Project officers will contact principal investigators to obtain these materials.

## Proprietary Information

By submitting an application in response to this solicitation, the applicant grants EPA permission to share the application with technical reviewers both within and outside of the Agency. Applications containing proprietary or other types of confidential information will be returned to the applicant without review.

## Funding Mechanism

The funding mechanism for all awards issued under this solicitation will consist of grants from EPA and depends on the availability of funds. In accordance with Public Law 95-224, the primary purpose of a grant is to accomplish a public purpose of support or stimulation authorized by Federal statute rather than acquisition for the direct benefit of the Agency. In issuing a grant agreement, EPA anticipates that there will be no substantial EPA involvement in the design, implementation, or conduct of the project funded by the grant. However, EPA will monitor progress, based in part on reports provided by awardees.

## Contacts

Additional general information on the grants program, forms used for applications, etc., may be obtained by exploring our Web page at <<http://www.epa.gov/ncerqa>>. EPA does not intend to make mass-mailings of this announcement. Information not available on the Internet may be obtained by contacting:

**U.S. Environmental Protection  
Agency  
National Center for Environmental  
Research and Quality Assurance  
Mail Code (8703R)  
401 M Street, SW  
Washington DC 20460**

Phone: 1-800-490-9194

In addition, contact persons have been identified below for this topic area. They will respond to inquiries regarding the solicitation and can respond to any technical questions related to your application.

- **Roger Cortesi**  
202-564-6852  
[cortesi.roger@epamail.epa.gov](mailto:cortesi.roger@epamail.epa.gov)
- **Robert Menzer**  
202-564-6849  
[menzer.robert@epamail.epa.gov](mailto:menzer.robert@epamail.epa.gov)

# APPLICATION FOR FEDERAL ASSISTANCE

1. TYPE OF SUBMISSION <i>Application</i> <input type="checkbox"/> Construction <input type="checkbox"/> Non-Construction		<i>Preapplication</i> <input type="checkbox"/> Construction <input type="checkbox"/> Non-Construction		2. DATE SUBMITTED	Applicant Identifier	
				3. DATE RECEIVED BY STATE	State Applicant Identifier	
				4. DATE RECEIVED BY FEDERAL AGENCY	Federal Identifier	
5. APPLICANT INFORMATION IS THIS PROPOSAL BEING SUBMITTED TO ANOTHER FEDERAL AGENCY? <input type="checkbox"/> YES <input type="checkbox"/> NO IF YES, LIST ACRONYM(S)						
Legal Name:				Organizational Unit:		
Address (give city, county, state, and zip code):				Name and telephone and E-mail number of the person to be contacted on matters involving this application (give area code) PI:  ADMIN. CONTACT:		
6. EMPLOYER IDENTIFICATION NUMBER (EIN): <div style="border: 1px solid black; width: 100px; height: 20px; margin: 5px 0;"></div>				7. TYPE OF APPLICANT: (enter appropriate letter in box) <div style="border: 1px solid black; width: 30px; height: 20px; display: inline-block;"></div>		
8. TYPE OF APPLICATION: <input type="checkbox"/> New <input type="checkbox"/> Continuation <input type="checkbox"/> Revision  If Revision, enter appropriate letter(s) in box(es): <div style="border: 1px solid black; width: 30px; height: 20px; display: inline-block;"></div> <div style="border: 1px solid black; width: 30px; height: 20px; display: inline-block;"></div> A. Increase Award B. Decrease Award C. Increase Duration D. Decrease Duration Other (specify): _____				A. State H. Independent School Dist. B. County I. State Controlled Institution of Higher Learning C. Municipal J. Private University D. Township K. Indian Tribe E. Interstate L. Individual F. Intermunicipal M. Profit Organization G. Special District N. Other (Specify) _____		
10. CATALOG OF FEDERAL DOMESTIC ASSISTANCE NUMBER: <div style="border: 1px solid black; width: 100px; height: 20px; margin: 5px 0;"></div> TITLE: 99-NCERQA - _ _ _				9. NAME OF FEDERAL AGENCY:  U.S. Environmental Protection Agency - ORD - NCERQA		
12. AREAS AFFECTED BY PROJECT (cities, counties, states, etc.):				11. DESCRIPTIVE TITLE OF APPLICANT'S PROJECT:		
13. PROPOSED PROJECT:		14. CONGRESSIONAL DISTRICTS OF:				
Start Date	Ending Date	a. Applicant		b. Project		
15. ESTIMATED TOTAL PROJECT FUNDING:		16. IS APPLICATION SUBJECT TO REVIEW BY STATE EXECUTIVE ORDER 12372 PROCESS?				
a. Federal	\$ .00	a. YES. THIS PREAPPLICATION/APPLICATION WAS MADE AVAILABLE TO THE STATE EXECUTIVE ORDER 12372 PROCESS FOR REVIEW ON:  DATE _____				
b. Applicant	\$ .00	b. NO. <input type="checkbox"/> PROGRAM IS NOT COVERED BY E.O. 12372				
c. State	\$ .00	<input type="checkbox"/> OR PROGRAM HAS NOT BEEN SELECTED BY STATE FOR REVIEW				
d. Local	\$ .00					
e. Other	\$ .00					
f. Program Income	\$ .00	17. IS THE APPLICANT DELINQUENT ON ANY FEDERAL DEBT?				
g. TOTAL	\$ .00	<input type="checkbox"/> Yes If "Yes," attach an explanation. <input type="checkbox"/> No				
18. TO THE BEST OF MY KNOWLEDGE AND BELIEF, ALL DATA IN THIS APPLICATION/PREAPPLICATION ARE TRUE AND CORRECT. THE DOCUMENT HAS BEEN DULY AUTHORIZED BY THE GOVERNING BODY OF THE APPLICANT AND THE APPLICANT WILL COMPLY WITH THE ATTACHED ASSURANCES IF THE ASSISTANCE IS AWARDED.						
a. Typed Name of Authorized Representative				b. Title		c. Telephone number
d. Signature of Authorized Representative						e. Date Signed



## INSTRUCTIONS FOR THE SF 424

This is a standard form used by applicants as a required facesheet for preapplications and applications submitted for Federal Assistance. It will be used by Federal agencies to obtain applicant certification that States which have established a review and comment procedure in response to Executive Order 12372 and have selected the program to be included in their process, have been given an opportunity to review the applicant's submission.

- | Item: | Entry:   | Item: | Entry:  |
|-------|--|-------|---|
| 1.    | Self-explanatory.  | 12.   | List only the largest political entities affected (e.g., State, counties, cities.)  |
| 2.    | Date application submitted to Federal agency (or State, if applicable) & applicant's control number (if applicable).   | 13.   | Self-explanatory.   |
| 3.    | State use only (if applicable).  | 14.   | List the applicant's Congressional Districts and any District(s) affected by the program or project.  |
| 4.    | If this application is to continue or revise an existing award, enter present Federal identifier number. If for a new project, leave blank.  | 15.   | Amount requested or to be contributed during the first funding/budget period by each contributor. Value of in-kind contributions should be included on appropriate lines as applicable. If the action will result in a dollar change to an existing award, include <u>only</u> the amount of the change. For decreases, enclose the amounts in parentheses. If both basic and supplemental amounts are included, show breakdown on an attached sheet. For multiple program funding, use totals and show breakdown using same categories as item 15. |
| 5.    | Legal name of applicant, name of primary organizational unit which will undertake the assistance activity, complete address of the applicant, and name and telephone number of the person to contact on matters related to this application.   | 16.   | Applicants should contact the State Single Point of Contact (SPOC) for Federal Executive Order 12372 to determine whether the application is subject to the State intergovernmental review process.   |
| 6.    | Enter Employer Identification Number (EIN) as assigned by the Internal Revenue Service.  | 17.   | This question applies to the applicant organization, not the person who signs as the authorized representative. Categories of debt include delinquent audit allowances, loans and taxes.  |
| 7.    | Enter the appropriate letter in the space provided.  | 18.   | To be signed by the authorized representative of the applicant. A copy of the governing body's authorization for you to sign this application as official representative must be on file in the applicant's office. (Certain Federal agencies may require that this authorization be submitted as part of the application.)   |
| 8.    | Check appropriate box and enter appropriate letter(s) in the space(s) provided:<br><br>— "New" means a new assistance award.<br><br>— "Continuation" means an extension for an additional funding/budget period for a project with a projected completion date.<br><br>— "Revision" means any change in the Federal Government's financial obligation or contingent liability from an existing obligation. |       |   |
| 9.    | Name of Federal agency from which assistance is being requested with this application.   |       |   |
| 10.   | Use the Catalog of Federal Domestic Assistance number and title of the program under which assistance is required.   |       |   |
| 11.   | Enter a brief descriptive title of the project. If more than one program is involved, you should append an explanation on a separate sheet. If appropriate (e.g., construction or real property projects), attach a map showing project location. For preapplications, use a separate sheet to provide a summary description of this project.  |       |   |

# KEY CONTACTS FORM

- ☐ **Authorized Representative:** *Original awards and amendments will be sent to this individual for review and acceptance, unless otherwise indicated.*

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Complete Address: \_\_\_\_\_

\_\_\_\_\_

Phone Number: \_\_\_\_\_

- ☐ **Payee:** *Individual authorized to accept payments.*

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Complete Address: \_\_\_\_\_

\_\_\_\_\_

Phone Number: \_\_\_\_\_

- ☐ **Administrative Contact:** *Individual from Sponsored Programs Office to contact concerning administrative matters (i.e., indirect cost rate computation, rebudgeting requests etc.)*

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Complete Address: \_\_\_\_\_

\_\_\_\_\_

Phone Number: \_\_\_\_\_

FAX Number: \_\_\_\_\_

E-Mail Number: \_\_\_\_\_

- ☐ **Principal Investigator:** *Individual responsible for the technical completion of the proposed work.*

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Complete Address: \_\_\_\_\_

\_\_\_\_\_

Phone Number: \_\_\_\_\_

FAX Number: \_\_\_\_\_

E-Mail Number: \_\_\_\_\_

## EPA STAR Grant Abstract (*Example Format*)

**Sorting Code:** 99-NCERQA-XX (*use the correct code that corresponds to the appropriate RFA topic*)

**Title:** *Use the exact title as it appears in the rest of the application.*

**Investigators:** *List the names and affiliations of each investigator who will significantly contribute to the project. Start with the Principal Investigator.*

**Institution:** *Name of university or other applicant.*

**Project Period:** *October 1, 1999--September 30, 2001, for example.*

**Research Category:** *Enter your research topic name.*

### **Project Summary:**

**Objectives/Hypothesis:** *include a short statement on the context of the proposed research in relation to other environmental research in the particular area of work*

**Approach:** *outline the methods, approaches, and techniques you intend to employ in meeting the objectives*

### **Expected Results:**

*including a brief description of the*

**Improvements in Risk Assessment or Risk Management**

*that will be realized if the expected results are achieved*

**Supplemental Keywords:** *see attached suggestions. Do not duplicate terms used in the text of the abstract.*

## SUGGESTED KEYWORDS

**Media:** (media, air, ambient air, atmosphere, ozone, water, drinking water, watersheds, groundwater, land, soil, sediments, acid deposition, global climate, indoor air, mobile sources, CASTNET, stratospheric ozone, tropospheric, marine, estuary, precipitation, leachate, adsorption, absorption, chemical transport)

**Risk Assessment:** (exposure, risk, risk assessment, effects, health effects, ecological effects, human health, bioavailability, metabolism, vulnerability, sensitive populations, dose-response, carcinogen, teratogen, mutagen, animal, mammalian, organism, cellular, population, enzymes, infants, children, elderly, stressor, age, race, diet, metabolism, genetic pre-disposition, genetic polymorphisms, sex, ethnic groups, susceptibility, cumulative effects)

**Chemicals, toxics, toxic substances:** (chemicals, toxics, particulates, ODS, VOC, CFC, PAH, PNA, PCB, dioxin, metals, heavy metals, solvents, oxidants, nitrogen oxides, sulfates, organics, DNAPL, NAPL, pathogens, viruses, bacteria, acid rain, effluent, discharge, dissolved solids, intermediates)

**Ecosystem Protection:** (ecosystem, indicators, restoration, regionalization, scaling, terrestrial, aquatic, habitat, integrated assessment)

**Risk Management:** pollution prevention (green chemistry, life-cycle analysis, alternatives, sustainable development, clean technologies, innovative technology, renewable, waste reduction, waste minimization, environmentally conscious manufacturing); treatment (remediation, bioremediation, cleanup, incineration, disinfection, oxidation, restoration)

**Public Policy:** (public policy, decision making, community-based, cost-benefit, conjoint analysis, observation, non-market valuation, contingent valuation, survey, psychological, preferences, public good, Bayesian, socio-economic, willingness-to-pay, compensation, conservation, environmental assets, sociological)

**Scientific Disciplines:** (environmental chemistry, marine science, biology, physics, engineering, social science, ecology, hydrology, geology, histology, epidemiology, genetics, pathology, mathematics, limnology, entomology, zoology)

**Methods/Techniques:** (EMAP, modeling, monitoring, analytical, surveys, measurement methods, general circulation models, climate models, satellite, landsat, remote sensing)

**Geographic Areas:** (Northeast, central, Northwest, Chesapeake Bay, Great Lakes, Midwest, Mid-Atlantic, states: {use both full name and two letter abbreviation}, EPA Regions 1 through 10)

**Sectors:** (agriculture, business, transportation, industry {petroleum, electronics, printing, etc}): {identify 4 digit SIC codes}, service industry, food processing, etc)

## Current and Pending Support

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.					
Investigator:			Other agencies (including NSF) to which this proposal has been/will be submitted.		
Support: <input type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> Transfer of Support Project/Proposal Title:					
Source of Support: Total Award Amount: \$                                  Total Award Period Covered: Location of Project: Person-Months Per Year Committed to the Project.                  Cal:                  Acad:                  Sumr:					
Support: <input type="checkbox"/> Current <input type="checkbox"/> Pending <input type="checkbox"/> Submission Planned in Near Future <input type="checkbox"/> Transfer of Support Project/Proposal Title:					
Source of Support: Total Award Amount: \$                                  Total Award Period Covered: Location of Project: Person-Months Per Year Committed to the Project.                  Cal:                  Acad:                  Sumr:					
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Source of Support: Total Award Amount: \$                                  Total Award Period Covered: Location of Project: Person-Months Per Year Committed to the Project.                  Cal:                  Acad:                  Sumr:					

\*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.

# Itemized Budget for EPA STAR Grant Applications (*Example Format*)

CATEGORIES	YEAR ONE	YEAR TWO	YEAR THREE	TOTAL PROJECT
<b>a. Personnel</b> Principal Investigator Co-PI Research Scientists Postdoctoral Scientists Other Personnel				
<b>TOTAL PERSONNEL COSTS</b>				
<b>b. Fringe Benefits</b> _____ % of _____				
<b>c. Travel</b> Trip 1 Trip 1 Trip 1 ...etc.				
<b>TOTAL TRAVEL COSTS</b>				
<b>d. Equipment</b> Item 1 Item 2 Item 3 ...etc.				
<b>TOTAL EQUIPMENT COSTS</b>				
<b>e. Supplies</b> Item 1 Item 2 Item 3 ...etc.				
<b>TOTAL SUPPLY COSTS</b>				
<b>f. Contracts</b> 1 2 3 ...etc.				
<b>TOTAL CONTRACTUAL COSTS</b>				
<b>g. Other</b> Item 1 Item 2 Item 3 ...etc.				
<b>TOTAL OTHER COSTS</b>				
<b>h. TOTAL DIRECT COSTS</b> (sum of a-g)				
<b>i. Indirect Costs/Charges</b> _____ % of _____ (base)				
<b>j. TOTAL PROJECT COSTS</b> (sum of h & i)				
<b>k. TOTAL REQUESTED FROM EPA</b>				